

Conference Abstract

# GeoDarwin, an Open-Source Geological Data Management Tool

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## Abstract

The Royal Museum for Central Africa (RMCA) holds one of the largest world collections of geological samples and documents about Central Africa (Congo, Rwanda, Burundi), offering unique reference material. The Geology services of RMCA contain around 16,000 minerals, 300,000 rocks, 21,500 fossils, and 30,000 maps. Their Archives include field notes, books, maps, and aerial photography containing valuable complementary information.

GeoDaRWIN is an “in-house” solution developed by RMCA as a collections management system for geological collections. Created using Microsoft Access, the model is currently transferred to open source software’s consisting of a PostgreSQL database and a customizable web-interface based on the Symfony 3 framework. Development began in 2018 and is still ongoing. Around 12,000 samples, 29,000 documents, and 30,500 localizations are already in the database.

GeoDaRWIN manages three categories collection materials: 1) field observations with their localization (e.g., coordinates, lithostratigraphy, drilling, structural analysis), 2) samples (minerals, rocks, fossils) and the results of their analysis (e.g., constituent minerals of rocks, heavy minerals, granulometry, magnetic susceptibility), and 3) documents (e.g., maps, archives, aerial photos, satellite images, documentation). In the model, these three types of information (field observations, samples, and documents) retain the existing relationships between them.

The aim of the project is to centralize all data in a single system on a service that can be available both on internet and intranet. It thus offers a common relational data model for these different geological items. The emphasis has been set on the integration of a hierarchical thesaurus of keywords, which can be mapped to several international vocabularies (e.g., INSPIRE, GEMET, examples coming from the GeoSciML documentation).

A Github repository of the database web interface in Symfony 3.4 is available at: [https://github.com/naturalsciences/natural\\_heritage\\_geology](https://github.com/naturalsciences/natural_heritage_geology).

This system aims also to be compliant with the central data portal developed by the Royal Museum for Central Africa, the Royal Belgian Institute of Natural Sciences, and Meise Botanical Garden. This portal will provide a common gateway to Belgian scientific data, one of the objectives of the project “Natural Heritage”, along with the development of databases for biological data (database called “DaRWIN”, more info on poster “**DaRWIN, Open Source system for collections data management**”) and geological data (“GeoDaRWIN”). See more info about project “Natural Heritage” in the poster “**NaturalHeritage: Bridging Belgian Natural History Collections**”.

## Keywords

data management, natural history collections, geological data, data quality and cleaning, central data portal

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Système de base de données modulaire interopérable et portail pour les collections belges d'Histoire Naturelle

## **Hosting institution**

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